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INTERNATIONAL ATOMIC ENERGY AGENCY

NUCLEAR DATA SERVICES

DOCUMENTATION SERIES OF THE IAEA NUCLEAR DATA SECTION

XA9950013

ECPL-86

The LLNL Evaluated Charged-Particle Data Library

Summary of Contents

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ECPL-86

This is the 1986 version of the Evaluated Data Library of the Lawrence Livermore National Laboratory (LLNL), USA, for scattering and reaction data of charged particles on light-element targets, superseding the previous ECPL-82.

Introduction to the 1986 version (taken from Ref./1/):

The LLNL Evaluated Charged-Partilce Library (ECPL) had its beginnings in the early sixties and has existed in its present format since 1974, with occasional extensions of the format to accommodate new reaction properties when the necessity for such extension became clear. During the past year, changes have been made in the data for 11 reactions and new complete evaluations have been entered for 14 reactions. The current version of ECPL contains complete data for 157 reactions induced by the five charged-particles: ^{1}H, ^{2}H, ^{3}H, ^{3}He, and ^{4}He. The targets include, in addition to these particles interacting with themselves and each other, ^{6}Li, ^{7}Li, ^{7}Be, ^{9}Be, ^{10}B, ^{11}B, ^{12}C, ^{14}N and ^{16}O.

Projectile energies up to 20 MeV.

Format: Data are given in ENDL Transmittal Format described in IAEA-NDS-53, Rev. 2 (1987).

Size of the library: 130 401 records of 80 char.

Documentation and contents:

No detailed documentation of the evaluations is available at present (except for internal LLNL reports), but publication within the UCRL-50400 series is envisaged. A detailed index can be found in Ref./1/.

The following table gives a Summary Index at the reaction level. Each column stands for one "reaction identifier", e.g. 13 = (...,3n). For each nuclide the projectile(s), for which the respective reaction data are given, are entered in the table.
E.g.: T in col. 13 for 3-LI-7 = 3-Li-7(t,3n) reaction.

Reference:

/1/ R.J. Howerton, R.E. Dye, M.H. MacGregor, S.T. Perkins, UCRL-50400 Vol. 28 (March 1986).

	Coloumb scatter-ing	Nuclear elastic plus inter-ference	(..,n')	(..,2n)	(..,3n)	(..,n'p)	(..,pn')	(..,n'^{3}He)	(..,n'α)	(..,n'2α)	(..,γnα)	(..,2nα)	(..,npα)	(..,2α)	(..,^{3}Heα)	(..,tp)	(..,p)	(..,d)	(..,t)	(..,^{3}He)	(..,α)	(..,γ)	(..,dα)	(..,pα)	(..,xγ)
	8	9	11	12	13	20	21	25	26	27	30	33	34	37	38	39	40	41	42	44	45	46	47	48	55
1-H-1	P,D,T, HE3,A	P,D,T, HE3,A	T																						
1-H-2	P,D,T, HE3,A	P,D,T, HE3,A	D,T			A	A				T						D,HE3								
1-H-3	P,D,T, HE3,A	P,D,T, HE3,A	P,D	T							D											P			
2-HE-3	P,D,T, HE3,A	P,D,T, HE3,A				T	T										D	T							
2-HE-4	P,D,T, HE3,A	P,D,T, HE3,A																							
3-LI-6	P,D,T, HE3,A		D	T				D	T							D	D,A	T,HE3		P	D		A	HE3	
3-LI-7	P,D,T, HE3,A		D,T	D	T				D			T	HE3				HE3		HE3		P,HE3		HE3		
4-BE-7	P,D,T, HE3,A																					T	D		
4-BE-9	P,D,T, HE3,A		A							A															A
5-B-10	P,D,T, HE3,A		D											D	P		D				P				
5-B-11	P,D,T, HE3,A		P,D											P			D								
6-C-12	P,D,T, HE3,A																								
7-N-14	P,D,T, HE3,A																								
8-O-16	P,D,T, HE3,A																								

	Coloumb scatter-ing	Nuclear elastic plus inter-ference	(..,n')	(..,2n)	(..,3n)	(..,n'p)	(..,pn')	(..,n'^{3}He)	(..,n'α)	(..,n'2α)	
	8	9	11	12	13	20	21	25	26	27	
1-H-1	P,D,T, HE3,A	P,D,T, HE3,A	T								
1-H-2	P,D,T, HE3,A	P,D,T, HE3,A	D,T			A	A				1
1-H-3	P,D,T, HE3,A	P,D,T, HE3,A	P,D	T							D
2-HE-3	P,D,T, HE3,A	P,D,T, HE3,A				T	T				
2-HE-4	P,D,T, HE3,A	P,D,T, HE3,A									
3-LI-6	P,D,T, HE3,A		D	T				D	T		
3-LI-7	P,D,T, HE3,A		D,T	D	T				D		
4-BE-7	P,D,T, HE3,A										
4-BE-9	P,D,T, HE3,A		A							A	
5-B-10	P,D,T, HE3,A		D								
5-B-11	P,D,T, HE3,A		P,D								
6-C-12	P,D,T, HE3,A										
7-N-14	P,D,T, HE3,A										
8-O-16	P,D,T, HE3,A										

(..,n'α)	(..,n'2α)	(..,γnα)	(..,2nα)	(..,npα)	(..,2α)	(..,^{3}Heα)	(..,tp)	(..,p)	(..,d)	(..,t)	(..,^{3}He)	(..,α)	(..,γ)	(..,dα)	(..,pα)	(..,xγ)
6	27	30	33	34	37	38	39	40	41	42	44	45	46	47	48	55
		T						D,HE3								
		D											P			
								D	T							
							D	D,A	T,HE3		P	D		A	HE3	
			T	HE3				HE3		HE3		P,HE3		HE3		
													T	D		
	A															A
					D	P		D				P				
					P			D								